

CLAIMS

1. A display apparatus, comprising:

a light panel that produces light for a display screen;

5 a frame supporting said light panel with dimensional stability;

a housing having said frame attached thereto, substantial portions of said housing being translucent; and

a cosmetic shield provided between said housing and said frame to mask said frame and said light panel from being visible through the substantial
10 portions of said housing being translucent.

2. A display apparatus as recited in claim 1, wherein said display apparatus is lid of a portable computer.

15 3. A display apparatus as recited in claim 1, wherein said light panel is a Liquid Crystal Display (LCD) panel.

4. A display apparatus as recited in claim 1, wherein the substantial portions of said housing are formed from a polycarbonate material.

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5. A display apparatus as recited in claim 1, wherein said housing lacks uniform ribs.

6. A display apparatus as recited in claim 1, wherein said display apparatus
25 further comprises:

an Electro Magnetic Interference (EMI) shield provided with or adjacent said frame.

7. A display apparatus as recited in claim 6, wherein said EMI shield includes a plurality of openings.

5 8. A display apparatus as recited in claim 1, wherein said frame attached to said housing at a peripheral portion of said housing.

9. A display apparatus as recited in claim 1, wherein said frame is metal.

10 10. A display apparatus as recited in claim 9, wherein the substantial portions of said housing are formed from a polycarbonate material.

11. A display apparatus as recited in claim 10, wherein said frame attached to said housing at a peripheral portion of said housing using connectors such that
15 the connectors are not visible through said housing.

12. A display apparatus as recited in claim 11, wherein an upper portion of said frame affixes to an upper peripheral portion of said housing using a plurality of tongues formed on the upper peripheral portion of said housing.

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13. A display apparatus as recited in claim 12, wherein a lower portion of said frame affixes to a lower peripheral portion of said housing using a plurality of screws inserted parallel to a primary surface of said

14. A display apparatus as recited in claim 1,

wherein said display apparatus further comprises:

an Electro Magnetic Interference (EMI) shield provided with or adjacent said frame, said EMI shield including a reflection region where the opening are not present, and

wherein said cosmetic shield including a cosmetic shield opening, the cosmetic shield opening being positioned across from the reflection region of said EMI shield.

15. A display apparatus as recited in claim 14, wherein the cosmetic shield opening pertains to a predetermined design.

16. A display apparatus as recited in claim 15, wherein the predetermined design is a symbol.

17. A display apparatus as recited in claim 15, wherein at least a portion of light from said light panel that reflects from the reflection region of said EMI shield produces an illuminated design on said housing when said light panel is active, the illuminated design corresponds to the predetermined design.

18. A display apparatus as recited in claim 17, wherein the predetermined design is a logo.

19. A display apparatus, comprising:

a housing, substantial portions of said housing being translucent;

a light panel provided within said housing, said light panel produces light for a display screen; and

a cosmetic shield provided between said housing and said light panel to mask said light panel from being visible through the substantial portions of said housing being translucent.

5 20. A display apparatus as recited in claim 19,

wherein said display apparatus further comprises:

an Electro Magnetic Interference (EMI) shield provided between said light panel and said cosmetic shield, said EMI shield including a plurality of openings and a reflection region where openings are not present, and

10 wherein said cosmetic shield including a cosmetic shield opening, the cosmetic shield opening being positioned across from the reflection region of said EMI shield.

21. A display apparatus as recited in claim 20, wherein the cosmetic shield
15 opening pertains to a predetermined design.

22. A display apparatus as recited in claim 21, wherein the predetermined design is a symbol.

20 23. A display apparatus as recited in claim 20, wherein at least a portion of light from said light panel that reflects from the reflection region of said EMI shield produces an illuminated design on said housing when said light panel is active, the illuminated design corresponds to the predetermined design.

25 24. A display apparatus as recited in claim 23, wherein the predetermined design is a logo.

25. A display apparatus as recited in claim 20, wherein said display apparatus is lid of a portable computer.

26. A display apparatus as recited in claim 25, wherein said light panel is a
5 Liquid Crystal Display (LCD) panel.

27. A display apparatus as recited in claim 26, wherein the substantial portions of said housing are formed from a polycarbonate material.

10 28. A method for illuminating a predetermined design in a translucent housing using reflected light, said method comprising:

emitting light from a light panel in first and second directions;

reflecting a portion of the light emitted in the second direction from a cosmetic shield, the cosmetic shield being provided between the housing and
15 the light panel;

reflecting a portion of the light reflected from the cosmetic shield back towards the cosmetic shield using a reflecting surface; and

passing a portion of the reflected light from the reflecting surface through an opening in the cosmetic shield having the predetermined design and then
20 through a corresponding portion of the housing adjacent the opening in the cosmetic shield, thereby illuminating the predetermined design in the translucent housing.

29. A method as recited in claim 28, wherein the predetermined design is a
25 logo.

30. A method as recited in claim 28, wherein the reflecting surface is provided by a portion of a EMI shield provided between the light panel and the cosmetic shield, the EMI shield includes openings that pass through substantial amounts of light yet provides electro-magnetic shielding, the openings are not
5 provided in the portion of the EMI shield providing the reflecting surface.

31. A portable computer, comprising:
a hinge; and
a housing having a display portion and a base portion, the display portion
10 being attached to the base portion with said hinge,
wherein the base portion includes at least a processor, and
wherein the display portion includes at least a flat panel display, an outer shell, and a frame supporting said flat panel display with respect to said portable computer by way of said hinge.

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32. A portable computer as recited in claim 31, wherein said frame is metal.

33. A portable computer as recited in claim 31, wherein said outer shell is attached to said frame.

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34. A display apparatus as recited in claim 31, wherein said flat panel display is a Liquid Crystal Display (LCD) panel.

35. A display apparatus as recited in claim 31, wherein the substantial
25 portions of said housing are formed from a polycarbonate material.

36. A display apparatus as recited in claim 31, wherein said housing lacks uniform ribs.

37. A display apparatus as recited in claim 31, wherein said display apparatus
5 further comprises:

an Electro Magnetic Interference (EMI) shield provided with or adjacent said frame.

38. A display apparatus as recited in claim 38, wherein said EMI shield
10 includes a plurality of openings.

39. A display apparatus, comprising:

a flat panel display that emits light in a forward direction and in a back direction when active; and

15 an outer shell for providing a housing for at least a rear portion of said display apparatus, said outer shell including a transparent portion through which a portion of the light emitted by said flat panel display in the back direction is able to pass, thereby illuminating the transparent portion when said flat panel display is active.

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40. A display apparatus as recited in claim 39, wherein said display apparatus further comprises:

a light diffuser provided between said flat panel display and the translucent portion of said outer shell.

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41. A display apparatus as recited in claim 40, wherein said light diffuser is a label.

42. A display apparatus as recited in claim 40, wherein the light passing through the transparent portion produces a multi-color illuminated design.

43. A display apparatus as recited in claim 42, wherein the multi-color illuminated design is defined by the transparent portion.

44. A display apparatus as recited in claim 42,
wherein said light diffuser is a label, and
wherein the multi-color illuminated design is defined on the label.

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45. A display apparatus as recited in claim 39, wherein said light diffuser is able to substantially normalize the intensity of the light being emitted through the transparent portion across flat panel displays with substantially different characteristics in the light emitted in the back direction.

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46. A display apparatus as recited in claim 39, wherein said display apparatus further comprises:

a light pipe that receives a portion of the light emitted in the back direction by said flat panel display, and directs the portion of the light received to a predetermined destination for illumination of a feature when said flat panel display is active.

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47. A display apparatus as recited in claim 46, wherein the feature is a design on a front portion of said display apparatus.

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48. A display apparatus as recited in claim 47, wherein the feature is external to said display apparatus.

49. A display apparatus as recited in claim 48, wherein the feature illuminates a keyboard of a computer associated with said display apparatus.

50. A housing for a computer device, comprising:

5 a front shell;

a back shell coupled to said front shell to produce said housing, electrical components for the computer device being internal to said housing; and

a foam stiffener provided internal to said housing to substantially fill unused space internal to said housing, thereby providing stiffness to said housing.

51. A housing as recited in claim 50, wherein said foam stiffener is lightweight.

15 52. A housing as recited in claim 51, wherein said foam stiffener is Styrofoam.

53. A housing as recited in claim 50, wherein the surfaces of said foam stiffener are contoured to adjacent surfaces internal to said housing.

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54. A stiffening system for providing distributed loading to a portable computer assembly, said stiffening system comprising:

a computer housing, said computer housing including a first member and a second member, said second member being coupled to said first member to form a volume therebetween and wherein said first member and said second member when coupled together form said computer housing;

a stiffener, said stiffener being disposed between said first member and said second member of said computer housing, said stiffener being configured to

substantially fill an unused portion of the volume between said first member and said second member wherein the outer surfaces of said stiffener respectively conform to the inner surfaces of the first and second member

5 55. A stiffening system as recited in claim 54, a laminate structure is formed from said first member, said second member and said stiffener which provide resistance to point pressure loading.

10 56. A stiffening system as recited in claim 54, wherein the inner peripheral surface of said first member has a complex geometry.

57. A stiffening system as recited in claim 54, wherein said stiffener is formed from foam.

15 58. A stiffening system as recited in claim 57, wherein said foam is packaging foam.

59. A stiffening system as recited in claim 54, wherein said stiffener further includes a cavity.

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60. A stiffening system as recited in claim 59, wherein said cavity is configured to provide clearance for internal circuitry or parts in said portable computer assembly.

25 61. A stiffening system as recited in claim 59, wherein said cavity is a weight reduction cavity.

62. A stiffening system as recited in claim 57, wherein said foam is formed from a material selected from the group consisting essentially of polyurethane, expanded polystyrene, expanded polypropylene and expanded polyethylene.

5 63. A stiffening system as recited in claim 54, wherein said stiffener further includes protrusions and depressions for filling empty spaces in said first member and said second member.

64. A stiffening system as recited in claim 54, wherein said first member is an
10 LCD display screen housing of said portable computer assembly.

65. A stiffening system as recited in claim 54, wherein said computer housing is a base housing of said portable computer assembly.

15 66. A computer system, comprising:

an antenna, said antenna being configured to transmit or receive RF signals; and

a computer housing, said computer housing being configured to enclose said antenna such that said antenna is entirely contained internal to said
20 computer housing and is operable while being internal to said computer housing without having to extend any portion of said antenna outside said computer housing.

67. A computer system as recited in claim 66,

25 wherein said computer housing includes at least a display housing, said display housing including at least a display screen, and

wherein said antenna is provided internal to said display housing.

68. A computer system as recited in claim 67,
wherein said antenna has first and second antenna poles, and
wherein said display housing has first and second sides, the first antenna
pole being placed at the first side and the second antenna pole being placed at
5 the second side.

69. A computer system as recited in claim 68, wherein said display housing
includes first and second recesses which respectively receive therein the first and
second antenna poles.

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70. A computer system as recited in claim 69, wherein the first and second
recesses are separated from said display screen by at least a predetermined
amount.

15 71. A computer system as recited in claim 68, wherein the first and second
antenna poles are separated from any metal surfaces within said display housing
by at least a predetermined amount.

72. A computer system as recited in claim 68, wherein the first and second
20 antenna poles are disposed at an outer peripheral region of said display housing
yet internal to said display housing and substantially invisible external to said
display housing.

73. A computer system as recited in claim 68, wherein said computer system
25 is a portable computing device.

74. A computer system as recited in claim 66, wherein said computer system
is a portable computing device.

75. A computer system as recited in claim 66, wherein antenna comprises:
an antenna cable having first and second conductors;

an outer conductor, said outer conductor being operatively coupled to
5 said second conductor of said antenna cable;

an inner conductor, said inner conductor being operatively coupled to
said first conductor of said antenna cable; and

an antenna housing, said antenna housing being disposed around the
outer periphery of said outer conductor and said inner conductor, and wherein
10 said antenna housing maintains a fixed separation between said outer conductor
and said antenna cable.

76. An antenna device for transmitting and receiving RF for use by a
computer, said antenna device comprising:

15 an antenna cable having first and second conductors;

an outer conductor, said outer conductor being operatively coupled to
said second conductor of said antenna cable;

an inner conductor, said inner conductor being operatively coupled to
said first conductor of said antenna cable; and

20 an antenna housing, said antenna housing being disposed around the
outer periphery of said outer conductor and said inner conductor, and wherein
said antenna housing maintains a fixed separation between said outer conductor
and said antenna cable.

25 77. An antenna device as recited in claim 76, wherein said antenna housing
is formed from polycarbonate.

78. An antenna device as recited in claim 76, wherein said outer conductor is formed from copper.

79. An antenna device as recited in claim 76, wherein said antenna cable is a
5 coaxial cable.

80. An antenna device as recited in claim 76, wherein an outer peripheral surface of said antenna housing is surrounded by shrink tubing.